

The American Journal of Urology

EDITED BY

Charles Greene Cumston, M.D.

OF BOSTON

Published under the auspices of the American Urological Association,
with the collaboration of:

SIR WILLIAM H. BENNETT, . . . LONDON	DR. E. LOUMEAU, BORDEAUX
PROF. W. WATSON-CHEYNE, . . . LONDON	PROF. DR. CASPER, BERLIN
REGINALD HARRISON, F.R.C.S., LONDON	DOCENT DR. PAUL STRASSMANN, BERLIN
DR. DAVID NEWMAN, . . . GLASGOW	PROF. DR. C. POSNER, BERLIN
DAVID WALLACE, F.R.C.S., EDINBURGH	PROF. DR. E. LESER, HALLE
PROF. PAUL SEGOND, PARIS	PROF. DR. KOLLMANN, LEIPZIG
PROF. HENRI HARTMANN, . . . PARIS	DR. FRANCIS S. WATSON, . . . BOSTON
PROF. THEODORE TUFFIER, . . . PARIS	DR. PAUL THORNDIKE, BOSTON
PROF. FELIX LEGUEU, PARIS	DR. J. BERGEN OGDEN, . . . NEW YORK
DR. E. DESNOS, PARIS	PROF. ALBERT VANDER VEER, . ALBANY
PROF. TEDENAT, MONTPELLIER	DR. SAMUEL ALEXANDER, . . . NEW YORK
PROF. LEON IMBERT, . . . MARSEILLES	PROF. DR. ZUCKERKANDL, . . . VIENNA
PROF. A. POUSSON, BORDEAUX	PROF. DR. ALI KROGIUS, . HELSINGFORS

AND MANY OTHERS

VOLUME II.

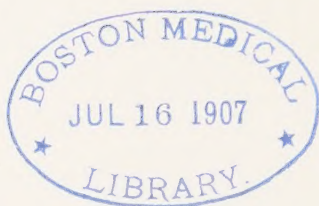
OCTOBER, 1905.—DECEMBER, 1906



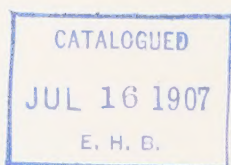
THE GRAFTON PRESS

PUBLISHERS

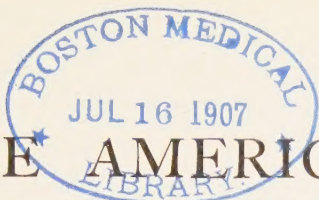
70 FIFTH AVENUE, NEW YORK



COPYRIGHT, 1905 AND 1906, BY
THE GRAFTON PRESS



9383



THE AMERICAN JOURNAL OF UROLOGY

VOL. II.

OCTOBER, 1905.

No. 1

EDITORIAL NOTICE

IN assuming the editorial direction of THE AMERICAN JOURNAL OF UROLOGY, the present editor's policy will have two principal ends in view, namely, to promote the interests of the American Urological Association in every manner possible, and, secondly, to raise the scientific standard of the JOURNAL to the highest point attainable. With this end in view, the co-operation and good-will of the members of the Association is greatly to be desired, and it is to be hoped that they will largely contribute, if only from the standpoint of the reputation of American urology.

The outlook for the JOURNAL is excellent, especially so when it is recalled to mind that it is the only publication in the English language limiting its subject matter strictly to the diseases of the genito-urinary apparatus. From the very fact that it already has a certain circulation abroad, it becomes at once evident that it has not passed by unnoticed.

Gonorrhœa is without doubt a very vast subject, but so much has already been written on the diagnosis and treatment of the acute stage of the disease, and since generally speaking it is at this period rather more in the province of the general practitioner than of the urologist, the editor feels it incumbent upon him to remark that papers pertaining to this subject cannot be accepted unless they are of unusual interest and importance. Let it, however, be understood that this does not apply to the pathology, complications and sequels of this affection which naturally form a most important chapter in genito-urinary surgery.

The pathology, symptomatology, diagnosis and surgical technique of genito-urinary diseases will form the subjects treated in the JOURNAL, at least to a great extent, while the normal anatomy and histology of the various organs entering into the genital and

uropoietic systems will not be neglected. Memoirs on renal and vesical affections from the medical point of view will also find a place in our pages when their importance is such as to be of particular interest to those engaged in this branch of surgery.

In closing, the editor appeals to the members of the Urological Association and to the profession at large for their support.

CONSIDERATIONS ON THE CAUSES RETARDING THE RECOVERY OF GONORRHEAL URETHRITIS

DR. A. RAVOGLI, Cincinnati, Ohio.

GONORRHEAL urethritis in a great many cases remains latent and uncured; the patient who does not see any more discharge from the urethra believes himself well and returns to his ordinary life. After a time, however, he complains of a little milky discharge in the morning, or that the lips of the meatus urethrae stick together. He suffers erections at night which prevent him from sleeping, and is often troubled with frequent urination, especially at night time. The patient grows worse until he is compelled to ask for medical attention.

It has been positively demonstrated that the gonococcus is the only cause of the acute contagious urethritis, and that the chronic urethritis following the acute form, is also maintained by the presence of the gonococci. In the latter case the gonococcus remains in the urethral mucosa without producing acute symptoms, but only causing local irritation. Gonococcus is not a pathogenic germ for lower animals, but that it is such for man has been demonstrated by Bumm, Wertheim, Anfuso, Kiefer, Finger, Ghon and Schlangenhaufer by the direct inoculation of the pure culture of the gonococci.

Gonococcus is a micro-organism capable of producing pus and inflammatory process, and this influence may be shown at a distance in a metastatic form, or it is shown by continuity in the adjoining organs, as in epididymitis, prostatitis, cystitis, etc.

According to Grosz and Kraus the gonococcus has an endogen poison and like the bacilli of diphtheria and of tetanus, does not secrete any toxin. The poison of the gonococcus is variable in its

intensity, and in solution if injected under the skin of animals or of man, produces local inflammation and fever. In the urethra of the man and in the camera of the eye of the rabbit it causes the formation of pus.

So far in spite of all the works of Emmerich, Pawlowski, Hueppe, Wood, Grosz and Kraus² and others, no process of toxic serum has been found capable of destroying the gonococci by immunization.

Grosz tried to find a specific agglutinin, by injecting cultures of dead gonococci in human serum. It was injected into man and animals, but the serum did not show any agglutinating power. Neither could Jundell find in patients suffering with general gonorrheal infection any agglutinating power in the serum.

It is a well known fact that the gonococcus does not produce immunity in the urethra. After recovery from gonorrheal urethritis, a fresh case can be reinoculated. In the same way a urethra affected with chronic gonorrhea can be reinfected with a fresh case. There remains only a kind of tolerance or rather habit of the urethra to the old gonococci, which cultivated and reinoculated in the same urethra did not produce inflammation, while on another healthy urethra they caused gonorrhea, as proved by Wertheim. This is explained by the increasing and by the weakening of the virulence of the gonococci, as has been found in other bacteria. Indeed, Boggerath, Milton, Schwartz, Finger and Jadassohn have already pointed out the fact that the infection from a chronic gonorrhea always produces symptoms of subacute or of a chronic form. In reference to this point we must be content with the clinical observations, for the reason that the animals are not susceptible to the attacks of the gonococcus.

In the normal urethra diplococci have been found by Lustgarten and Mannaberg,³ and they have called them pseudogonococci. Bumm described a diplococcus as micrococcus sub flavus, which he found in the vaginal secretions. Steinschneider and Galewsky found pseudogonococci not only in the normal urethra, but also in the gonorrheal secretions.

These diplococci, however, react positively to the Gram

¹ Handbuch der Urologie I Band, 1904, p. 409, Frisch und Zuckerkandl.

² Grosz und Kraus. Bacteriologische Studien über den Gonococcus. Arch. Derm. und Syphil., XLV., p. 329.

³ Lustgarten und Mannaberg. Arch. f. Derm. und Syph., 1887, p. 905.

method, and are easily cultivated in ordinary agar. Gonococci do not grow on agar or glycerin agar.

We have thought it best to recall the biological properties of the gonococcus, in order that we may more clearly expound our ideas.

When we undertake the treatment of a gonorrheal urethritis, the examination of the secretion has to be made for the diagnosis, and it has to be repeated often in order to ascertain the quantity, the disposition and the location of the gonococci. The gonococci are usually found in the protoplasm of the pus cells in the acute stage, and in the protoplasm of the epithelial cells in the subacute and chronic cases.

Drobny⁴ pointed out the fact that the more extracellular gonococci are present, the more severe and complicated will be the course of the urethritis. The complications consisted in lymphangitis of the penis, oedema of the prepuce, swelling of the inguinal glands, prostatitis, epididymitis, orchitis, cystitis, inflammation of the neck of the bladder gonorrheal rheumatism and fever. It seems that in these cases the gonococci with increased virulence produce toxins, which render the leucocytes unable to cope with them, and they do not envelop them any more. The free gonococci enter into the interstices of the tissues of the urethra and spread to the contiguous tissues and organs. Toxins are the cause of the fever.

It is only by the examination of the secretion that we are able to form an idea in reference to the prognosis, and choose appropriate remedies for the treatment. When the secretions are repeatedly examined a great many cases of the so-called pseudo-gonorrhea will disappear, and the relapse will be found in a new autogenous or exogenous gonorrheal infection.

One of the causes which will retard the cure of a gonorrheal urethritis is to be found in the treatment. In many instances young men consider gonorrheal urethritis a disease of little importance, and rather than consult a physician, they rely on the advice of a friend or of a friendly druggist.

In many cases the treatment is nothing more than the administration of balsams, which although they have some soothing effect

⁴ Drobny, B. A. *Über die Abhängigkeit der Verlaufs der Urethritis von der localization der Gonococcen.* Arch. f. Derm. und Syph., XLVI., p. 32.

on the inflamed mucous membrane, diminishing the purulent discharge, have no bactericidal effect. Valentine⁵ proved experimentally that bacteria of different kinds together with gonococci were vegetating on culture media composed of the urine of individuals who for weeks had been taking santal oil. The slight improvement noted in gonorrheal urethritis due to santal oil must be considered as a modification induced on the mucous membrane by the santalate of sodium, which results from the chemical changes in the organism.

The gonococcus when gradually attenuated in its virulence, and when the mucous membrane gets used to its presence, the organic reaction diminishes, and the leucocytes are scanty and the gonococci are free. Many are found in the protoplasma of the epithelial cells. The gonococci gradually find their way into the muciparous glands and in the lacunae Morgagni. The urethra is only irritated, but the purulent secretion has ceased and only a scanty mucous secretion can be found. In this secretion gonococci are at times scanty and at times abundant, mostly in the protoplasma of the epithelial cells at their junction, very rarely in the nucleus. In some cases epithelial accumulations are seen with gonococci showing that they are formed by the epithelial lining of the glands.

There is no doubt to-day after the studies of Neisser, that the treatment of gonorrheal urethritis must be mostly local, and that the irrigation method has given the most satisfactory results, as demonstrated by Goldberg,⁶ Valentine⁷ and others. With this method, when properly and scientifically applied, we succeeded in obtaining cures of gonorrhea in ninety per cent. of all cases in a remarkably short time. The irrigation treatment as given by Janet and applied by Felicke, Frank, Swinburne, Valentine and many others, must be intelligently applied with a knowledge of the process and of the period of the gonorrheal urethritis.

At first we find of great advantage, the irrigations of the anterior urethra with a mild solution of potassium permanganate,

⁵ Valentine, F. C. Der Einfluss des Oleum Santali auf das Bakterien wachstum in besondere auf die Gonococcus, XXXII., p. 169.

⁶ Goldberg. Die Behandlung der Gonorrhea mit Auspülungen von übermangansaurem Kali. Centr. Blatt. f. die Krank. der Harn. und Sex. Org. B VII., Heft. 3 und 4.

⁷ Valentine. The Irrigation Treatment of Gonorrhea. New York, 1900.

1 to 5000 in warm water, increasing somewhat its strength with the subsiding of the inflammatory symptoms. Then the irrigation is made with a solution of silver preparation, as protargol, or better picratol, which combines the action of the picric acid and of the silver.

It is not our object to enter into the question of treatment; all that we wish to demonstrate is that the neglect of treatment, or relying on a simple expectant treatment, is the cause of retarding the perfect cure of gonorrheal urethritis. In these cases of unfinished cure of gonorrheal urethritis, the treatment consists in irrigations and instillations. The instillation must be of a solution of a silver salt, or of ichthyol, or picric acid, capable of producing a superficial necrosis of the epithelium of the mucous membrane, so as to obtain a casting off of the epithelium, which comes out with the gonococci contained in the protoplasm of its cells.

Another important factor retarding the treatment of gonorrheal urethritis is the habits of the patient. Indeed, Max von Zeissl⁸ has stated that gonorrhea resists all possible injections, as well as the internal employment of the various specifics, if there be not, at the same time, a conscientious regulation of the patient's mode of life and diet, and if the patient does not strictly observe the same. It would be of great benefit for the patient to rest in bed, but as this is in most of the cases impossible, we must forbid all active and strong passive movements. Alcoholics, carbonated beverages, and black coffee must be forbidden, since they favor the desire to urinate and may be the cause of cystitis. The ridiculous and superstitious idea of "drinking away a clap" is really one of the causes of making gonorrhea much more severe, or even chronic. In the same way, the exercise of coitus, which is dangerous for other persons, may cause severe complications of gonorrhea, hemorrhages, and later on prostatitis, epididymitis, etc.

For this reason it is our duty to sketch the rules for the patient with gonorrhoea so he may not himself be the cause of retarding the cure.

Another cause of retarding the cure of gonorrheal urethritis is an early attack of the posterior urethra. In spite of the interesting researches of Max von Zeissl, and although he expressed

⁸ Von Zeissl, Max. Gonorrhea of the male urethra. Translated by Bierhoff, A. J. OF UROLOGY, 1905, N. 7.

the opinion of the uselessness of the distinction in an anterior and posterior urethritis, yet this division still holds good in our clinical experience. In the largest number of cases of gonorrheal urethritis, we see the process limited to the anterior urethra up to the isthmus, and the patient although suffering with all the symptoms of the acute inflammation, yet he retains his urine for the normal time and does not show complications involving the posterior urethra.

When the gonorrheal process has diminished in intensity in the anterior urethra after the third week, then it spreads to the pars posterior, which is usually considered a complication. The difficulty of reaching the posterior urethra by the ordinary injections with syringes is the cause of the process becoming chronic and of the gonorrhea being prolonged for months and for years in a latent state.

Another difficulty which is found in the treatment of the posterior urethra, although given by an experienced urologist with the irrigation method, is the production of prostatitis and of epididymitis. Indeed, as Colombini⁹ has stated, prostatitis, spermato-cystitis and deferentitis are without apparent symptoms and are of frequent occurrence in the course of gonorrhea.

In several instances we have seen the patient a few hours after an injection suffer with unbearable pains in the prostatic region. The patient cannot lie down in bed or stand on his feet. The only desire he feels is to seat himself on the closet, believing that he must defecate. The micturition is quite frequent, the last few drops are accompanied with vesical tenesmus, and at the end of the act the patient does not experience relief.

We have often seen this condition follow an irrigation made with the Janet irrigator, with a warm mild solution of permanganate of potassium. It is a great obstacle to the treatment, because we must stop all injections, abstain from the introduction of all instruments, until the inflammatory process of the prostate has subsided.

In the same way we are handicapped in the treatment of chronic gonorrheal urethritis from a complicating epididymitis. We have seen cases of chronic gonorrheal urethritis where every irrigation and every application of a catheter or of a sound has

⁹ Colombini, P. Della frequenza della prostatitee della vesicolite. *Giornale Italiano delle malattie ven. e della pelle*, 1896, p. 545.

produced epididymitis. In these cases the epididymus of one side is swollen, hard, painful, and this is accompanied with neuralgic pains along the groin. The pain has quite often prevented our patients from standing or walking, so that they were compelled to lie down in bed. These unfortunate complications discourage the patient in continuing treatment and are often the cause of the uncured gonorrheal urethritis.

The presence of an old stricture and also of the formation of a new infiltration on the mucosa, that which we call, wrongly, a wide caliber stricture, is often a cause of difficulty in the cure of gonorrheal urethritis. This condition is oftener observed in the bulbar region of the urethra where the mucous membrane is more closely drawn by the action of the transverse muscles. It begins as a spot, uneven, dull, eroded, congested and covered with fine red granulations, as can be seen by the urethroscope. This condition was demonstrated in the subject by Vajda, Guyon and Bazy, Gosselin and Finger. They have found epithelial thickenings and cicatrices resulting therefrom, some ridged and net-shaped, somewhat elevated, in part formed by epithelium and in part by subepithelial connective tissue. In these cases the subepithelial connective tissue exhibits important changes and is the site of the chronic inflammatory process. It is densely infiltrated with round mononuclear cells, and the infiltration surrounds also the glands and the lacunae which are imbedded in the subepithelial tissues. In these cases, according to Bumm, relapses of acute urethritis are due to the fact that the gonococci from the deeper tissues make their way to the more superficial epithelium. We have found epithelial cells, epithelial scales, all containing numerous gonococci. There remain only slight symptoms of irritation other than inflammation, no leucocytes are present, but the gonococci are contained in the epithelial cells. For any morbid cause the process may undergo an exacerbation. Extravasation of lymph and leucocytes takes place, which fissure the epithelium, and through it the gonococci again penetrate the papillary body, producing a mild suppuration in the form of a relapse. For this reason we do not believe in the pseudo-gonorrhea, because in all our cases we have found the presence of the gonococci. The gonococci, however, are weakened and their virulence has been attenuated by remaining on the same soil, and for this reason at

this period the gonococci inoculated in another person will reproduce gonorrhea in a chronic rather than in an acute form. Gradually the tissues are so accustomed to the presence of the gonococci, that they will remain in the papillary layer, in the follicles without apparent inflammatory symptoms, but their constant irritation will cause a chronic proliferating process on the mucous membrane. In some cases it is possible that the gonococci deep in the tissues are not found in the secretion. It seems that the presence of a stricture, or of an infiltrated place in the urethra is the hiding place of the gonococci and this prolongs the gonorrheal process.

In these cases we cannot finish the treatment of gonorrhoea unless we have dilated the stricture, and locally treated the granulating surface by the application of remedies introduced through the urethroscope.

The last and the most stubborn cause prolonging the gonorrhea is the reinfection. This condition might be called marital gonorrhea and it results from a series of reinfections followed by improvements, which maintain gonorrhea for years. In our experience we have seen chronic gonorrhea in husband and wife for several years. Van Schaick¹⁰ examined sixty-five married women above any suspicion, who complained of suffering with leucorrhea, which was found to be due to the presence of gonococci. In seventeen cases the gonococci were found on the first examination. Among nineteen the gonococci were found in three on the second examination, and in three other cases gonococci were found among the thirty-two remaining. In three cases there were symptoms of an acute gonorrhea.

We have had occasion to treat cases of male patients with a case of latent gonorrhea who have infected their wives at the time of their marriage, and also of married men who have acquired a case of gonorrhea and have infected the wife. The gonorrheal affection has remained in a subacute or in a chronic condition in the woman without causing her marked apparent disturbances. In some cases the gonococci remain in the vaginal cul-de-sac, in most of these cases in the cervix, causing a form of chronic endocervicitis. In these places the gonococci produce a

¹⁰ Van Schaick, G. C. The Frequency of Gonorrhea in Married Women. *New York Med. Journal*, LXVI 18, Oct. 30, 1897. *Ref. Arch. Derm. und Syph.*, XLVI, p. 157.

mild purulent catarrh, which under the microscope shows the cocci. There is no local pain connected with it, but only a mild catarrhal discharge which is easily believed to be a leucorrhea, or even female troubles. The epithelium is affected and is exfoliated in its superficial layers, while in the deep layers it is increased. The gonococci make their way to the subepithelial tissue, causing an infiltration of mononuclear cells, some fusiform cells and a large quantity of polynuclear leucocytes. The blood-cells of the subepithelial layers are somewhat enlarged, are congested and contain many polynuclear leucocytes. There occurs a proliferation of the nuclei of the fibers of the connective tissues, which gives origin to small red granulations which are seen in the patches on the mucous membrane affected by the gonorrheal process. The presence of the granulations maintains a chronic gonorrheal catarrh, which is the cause of infection. In some cases the infection may remain in the urethra, or in the glands at its entrance, glands of Skeene, or in the Bartholini's glands, so that there is left a hidden focus of gonorrheal catarrhal inflammation, which lasts for an indefinite time. In some cases in our practice we have seen the catarrhal process extended to the endometrium in the form of chronic endometritis. The presence of the gonococci in an ascending gonorrhea of the uterus had been demonstrated by Wertheim and Reymond, showed gonococci in the pus contained in the tubes and in one of the ovaries. This shows the persistence of the gonococci in the genitals of the woman without producing acute inflammatory symptoms. The gonococci have been attenuated in their virulence on account of their reproduction on the same ground. If inoculated into a new healthy urethra they will cause an acute clap, but reinoculated on the same urethra, as in the cases which we have called marital gonorrhea, they cause but a recrudescence of the chronic gonorrhea.

In order to be able to finish the treatment of gonorrhea in these cases it is necessary to forbid coitus during the treatment, or to advise the use of the condom. In these cases the condom is of great advantage because it prevents the reinoculation while the treatment is going on.

The coitus without protection will not be allowed unless repeated microscopic examinations have shown the secretions free from gonococci.

TREATMENT OF CHRONIC URETHRITIS IN THE MALE.

By G. S. PETERKIN, M.D.

Mr. President and Gentlemen:

WE are all, I use the word advisedly, trying to treat chronic urethritis of gonorrheal origin, judging from the variety of opinions held as to the correct method to be pursued in order to attain the results desired, namely—a cure.

Personally, I believe there are no panaceas for any of the ills that human flesh and mind are heir to. Especially is this true of gonorrhea. Therefore, I shall merely state the rationale of a method of treatment pursued in a number of cases of chronic urethritis of gonorrheal origin, leaving you to judge as to its value. For convenience, all cases will be divided, according to the character of the discharge, into three classes.

First—The morning drop or *La Goutte Mulletaire*, where the secretion, after stripping the urethra, appears at the meatus in the form of a globule, the color of which may vary according to the microbic infection.

Second—The glued meatus, where the secretion appears at the meatus and agglutinates the borders, often keeping the meatus red from the lacerations caused by the sudden removal of incrustation by the stream of urine.

Third—The shreddy or urinary discharge, where the secretion is so slight in quantity that it collects and remains adherent to the point where it is formed and only appears as shreds on urination.

Naturally, in all such cases, it is assumed that posterior urethritis, prostatitis and vesiculitis as causative factors of the discharge have been excluded and that the presence or absence of gonococci has been noted. At once it is recognized that this clinical classification may be applied to the discharge that occurs in all forms of chronic urethritis, which Obelander has classified, with the aid of the urethroscope, as

First—Chronic urethritis with soft infiltrations.

Second—Chronic urethritis with hard infiltrations; and its various sub-divisions depend upon the degree of density of the new formed tissue and the diminution of the caliber of the urethra. But there is this clinical difference, that after systematic treatment for a sufficient length of time by dilators, sounds, astringent and antiseptic irrigations and injections, cauterization of the diseased area, destruction of the infected glands of Littre and crypts of Morgani with Kohlmann's electric needle, cautery, etc., the discharge still permits a considerable number of such cases to remain in the classification given. In other words, these recognized methods of treatment have failed.

Urethroscopic examination will show that the following condition exists. Instead of the urethritis being as general, it has cleared up except at a few definitely localized areas that are usually situated in the fossa navicularis, one-half inch posterior to this, at the second normal physiologic urethral constriction, or at the peno-scrotal junction.

On examining these areas closely, they present the following appearance: The epithelium has lost its brilliancy,—is opaque and perhaps rough, though the area may show granulation tissue, which is not usually the case. The striations of the urethra at this point are irregular, as is the central figure, the glands of Littre either patulous or cystic or so constricted as not to be plainly visible; likewise the lucunae of Morgani. In fact, it is the same picture as seen at the commencement of treatment, modified by treatment to the extent that the epithelial surfaces have possibly regained somewhat their normal appearance, but never wholly; and if treatment is suspended they immediately relapse into their former pathologic condition.

Pathologic anatomy. The areas under discussion vary from a stage where the cylindrical epithelium has changed into squamous. These squamous cells may consist of one or several layers, the pathologic processes being limited to epithelium alone; or, the mucosa or sub-mucosa may be infiltrated with new formed cells that are in various stages of transformation into fibrous tissue, the transformation into fibrous tissue being greatest at the surface of the lesion; at the deeper portion, the cells still retaining their embryotic character.

The recognized method, in fact the only method of promot-

ing absorption of infiltrated tissue in the urethra is by pressure, whether through sounds, dilators, bougies or other instruments. But as stated here, they have been applied and do not produce results in certain areas as they do in others likewise affected. Why is this the case? The explanation, I believe, is simple. The caliber of the urethra is not constant and varies frequently within wide limitations. Its physiologic points of narrowing are, as well known,

First—At the meatus.

Second—At the peno-navicular junction.

Third—About one-half inch back of this.

Fourth—At the peno-scrotal junction.

Therefore, in the depressions at or near the constrictions, as in the fossa navicularis, we find these localized infiltrated areas as described and there they remain, unaffected by the pressure of the sounds and dilators, for the sounds and dilators are uniform in diameter and the normal physiologic points of constriction mentioned prevent these instruments asserting the required amount of pressure at points that are dilatable beyond such normal point of constriction.

A simple method of applying the required amount is as follows; and in my experience has been productive of results. Moreover, in this method I have found an efficient means of curing the discharge that formerly I thought could only be overcome by meatotomy, which I myself do not consider, when universally employed, good genito-urinary surgery. The method, briefly, is as follows:

Patient voids his urine in two or three ignition tubes, in which the character of the discharge, as to shreds, etc., may be noted at each urination. The anterior urethra is then irrigated with a mild 1-6000 or 1-8000 permanganate solution, under hydrostatic pressure, for the purpose of cleansing the urethra. Patient reclines on a table, then a straight silver canula thirteen centimeters or five inches in length, attached to a small Janet-Frank syringe containing the following:

Hermophenyl, gm.....	.04
Argyrol, gm.....	2.40
Glycerine, cc.....	7.50
Mucilage Irish Moss, cc.....	22.50

a semi-solid fluid, is gently inserted to the sphincter urethrae and then withdrawn, the fluid meanwhile being slowly injected so as to paint the urethral mucous membrane.

A Beniqué sound, largest possible size, is then sterilized by passing through the flame of an alcohol lamp and when cool inserted into the urethra. The penis being grasped with the thumb of the left hand below the urethra and the index and middle fingers above, at the point where the infiltration exists, as localized by the urethroscope, so as to steady the two corpora cavernosa and prevent their slipping on the sound and injuring the urethra when pressure is applied.

If the area of infiltration is on the superior surface of the urethra, the sound is held so that the curve will be toward the head of the patient and the affected area at the center of the curve, thus distending the urethra at this point as much as possible.

With the fingers in the position stated, the urethra is gently massaged, the pressure being gradually increased until it is as much as can be applied by means of the fingers. Apparently, this causes little or no pain. If the infiltration is on the inferior surface, especially as in the fossa navicularis, the sound is turned so that the curvature will point toward the feet. This stretches the urethra in this position and permits of the pressure being applied to the embryotic tissue least affected by this fibrous transformation, as it cannot be by any other means.

After the treatment is completed, a urethral cap is applied so that the patient will not soil his clothing, the medicine injected being allowed to remain. This treatment is repeated every three or four days. If there is much reaction, intermediate irrigation of a mild antiseptic or astringent is given.

The physiologic action of the ingredients of the prescription is as follows: The glycerine softens the squamous epithelium; the argyrol increases diapedesis, also acts as an antiseptic and aids in the penetration of the h ermophenyl, a mercure phenol disulphide of soda, forty to 100 of mercury, whose antiseptic properties are more apt to be efficient as the bacteria present at this stage are usually pyogenic.

Instead of the fluid formula given, the following,

Hermophenyl, gm.....	.04
Argyrol, gm.....	2.40
Glycerine, cc.....	3.75
Mucilage Irish Moss, cc.....	26.20

that varies only in consistency, may be employed upon the sound as a lubricant, thus dispensing with the syringe, though I myself prefer the latter.

Reciting a number of cases in which this method has been employed would only consume too much time to little advantage. My excuse for offering this paper is that the method advocated is simple, is seldom used, though it does not require any special armamentarium, and may be readily adopted by the general practitioner with advantage.

LAVAGE OF THE RENAL PELVES IN THE TREATMENT OF LITHAEMIA, PYELITIS, AND CERTAIN FORMS OF NEPHRITIS, WITH NOTES OF ILLUSTRATIVE CASES.

By FRANK M. JOHNSON, M.D., Boston, Mass.

CYSTOSCOPY and ureteral catheterization are to-day more nearly than ever before accorded their true position. The former general impression that the procedure is beset with many difficulties is rapidly disappearing as an increasing number of physicians become familiar with its performance. I believe that in the near future no serious operation on the kidney will be undertaken until the condition of each organ as related to the normal and to each other has been fully demonstrated by ureteral catheterization and by microscopic and other findings of the separate urines thus obtained. Owing to the many excellent articles in recent literature, the technic of the procedure is now well known and need not in this paper be considered; my personal preferences regarding its various points have lately appeared elsewhere (*Medical Record*, May 20, 1905.)

Sufficient time has now elapsed since local medication of the

ureter and kidney thus made possible has been employed, to determine if this method of treatment is worthy of acceptance by the profession. Measured by its results, lavage of the kidney must surely be regarded as a justifiable procedure. In saying this I would in no way detract from the praise due those men who have solved many difficult questions regarding diet and internal medication in the conditions under discussion, because in all the cases thus far treated both those factors were of great importance; with them alone, however, much that is desirable is still lacking. To Ayres of New York should be given full credit for being the first to maintain and to demonstrate that in many lesions of that organ, lavage of the kidney with proper medicants gives better and more permanent results than can be obtained by the older methods. Personal experience has proven to my entire satisfaction that Dr. Ayres has presented to the profession a most valuable adjunct to the treatment of renal and ureteral lesions.

All patients suffering from those lesions, who have come under my care, had previously been given internal remedies and been dieted, with but slight benefit; when lavage was added, improvement was soon manifest and in many instances complete cure has been obtained. My most earnest wish is that a keener interest in the subject will be awakened, that a wider knowledge will prevail, and that the men who are devoting their time and energies to this all-important field of work will gain the confidence and moral support of their medical brethren. Zealous though they are, their task will be still lighter when the principles for which they labor are accorded a well-won recognition. My purpose in this paper is briefly to direct attention to certain lesions that are favorably influenced by renal lavage and to indicate the results that are thereby being secured.

First.—*Lithaemia*: Stubborn cases of this imperfectly understood condition often resist the most varied methods of treatment. Remedy after remedy is tried without producing marked improvement in the condition of the patient; change of air and scenery effect but transient gain. Thorough examination generally shows that the kidneys are at least irritated, and may be decidedly inflamed, by the action of the uric acid products they are eliminating. In these cases a few complete washings of the kidneys act as a starting point towards recovery. As a result of this

local treatment, internal medication, diet and other measures begin to act properly and improvement is prompt. All the cases treated by lavage of the kidneys in addition to the ordinary measures usually employed, have been discharged as cured. In a few cases of oxaluria refusing to yield to internal remedies, lavage promptly brought about a return to the normal. I may state here also that in cases of lithaemia, burnt magnesia in one-half to one teaspoonful doses given three times a day in water, has given me better results than are obtained from dilute nitromuriatic acid.

The drug giving the most satisfactory results in kidney lavage is silver nitrate. Solutions, in distilled water, are injected while warm, the strength varying with the individual case. A weak solution, say 1 to 12,000, should be first employed; later this may be gradually increased until 1 to 2000 is reached; mild solutions of protargol, nargol, albargin, and other salts of silver also act well, but in my experience the results obtained from their use are not so lasting as those produced by the nitrate.

Second—*Pyelitis*: This affection is of the greatest importance to all those who practice surgery and medicine, yet in the very early stages it is seldom recognized. Even when found, it apparently receives but little attention. It is claimed for certain preparations, that when given internally, they irrigate the kidney to a degree sufficient to cure inflammation of its pelvis. I have thoroughly tried such remedies in enough cases and for an adequate length of time to prove that usually such claims are not supported by facts. There can be no doubt that by this natural process of irrigation a cure in some cases may be obtained, but even in these, lavage properly performed, yields a much more rapid recovery; because of this, the procedure guards more effectually against further invasion of the process, a point of the utmost importance.

In each case there is a particular cause which must be located and removed. Often there will be found in the pelvis of the kidney, a large or small calculus, removal of which may be followed by spontaneous disappearance of the pyelitis. Again, disturbances of the intestine or stomach, may provoke inflammation of the renal pelvis and attention to the causative elements will secondarily exert a healing influence upon the kidney. But even these cases are more quickly and permanently cured if lavage be

added to other measures. Howard Kelly of Baltimore, has so ably defended lavage of the kidney in pyelitis, covering thoroughly the entire field, that but little can be added to his admirable presentation of this subject; with him I agree most fully. I likewise find either salol or urotropin the best medication to give by the mouth. Silver nitrate solution, 1 to 2000, yields desirable results when injected into the renal pelves. At times when irritation of the pelves and ureters is particularly severe, it is better to employ warm, soothing injections rather than even the milder silver preparations.

I have quite often found as a bar to cystoscopy, tenderness deep in the urethra and about the neck of the bladder. In these cases, warm, soothing oils injected freely about the sensitive areas, accomplish much in relieving the tenderness and promoting resolution. Strictures, in both men and women, play also a highly important part in the derangements found; it is almost needless to add that the first step in such cases is to eradicate the influence of the stricture by complete dilatation. Gonorrheal infection and extension is often a cause of pyelitis; fortunately no other causal element is more readily conquered by frequent lavage.

In the not infrequent cases of pyelitis occurring secondary to cystitis, stronger solutions should be used for the bladder and treatment of that viscus made more often. As the bladder regains tonicity, there is a corresponding improvement in the pyelitis. In one of my cases of ulcerative cystitis of nearly one year's duration, there was an extension of the process into both ureters and pelves. The ureters were so indurated and tender that even a small catheter could not be inserted. Under daily lavage the cystitis improved, but not sufficiently to warrant cystoscopic interference with any surety of gaining better results. Cystotomy was finally performed and resulted in the bladder regaining its normal condition, the ureters and kidneys also markedly improved. Now catheterization of the ureters and consequently lavage of the kidneys can be readily performed.

Third—*Pyelonephritis*: A pyelitis remaining unchecked will end in pyelonephritis. Other etiologic factors cannot be discussed, as there is space only to cite examples of pyelonephritis that have derived great benefit from lavage. Thirty cases have

been thus treated; all were carefully observed and the microscopic findings in the separate urines recorded. To-day the majority of these patients are well and the remainder are greatly improved. In this class of cases the choice of fluids used, their temperature, the frequency of application, and other details must be determined for each patient by the exact conditions found. The general condition of the patient as a result of the necessary manipulation and the improvement, or lack of it, as shown by microscopic examination of the urine, must in each instance be taken into consideration in determining the course of treatment.

Fourth—*Pyonephrosis*: A case of pyonephrosis previously reported as under treatment and improving daily, has now received no application for five months. The affection was confined entirely to the right kidney and evidently as a result of lavage, given at first once and later twice a week, a complete healing has occurred. Chemical examination of the mixed urine reveals neither albumin nor other abnormal constituent. The separate urines give indication of but slight irritation in the renal pelvis. The patient did not lose a day's work during treatment. The first time the catheter was introduced and the right kidney injected, colic was produced, but this did not again occur. The patient soon grew accustomed to the introduction of the cystoscope and cocaine was unnecessary in the urethra or bladder. This fact is mentioned simply to show that tolerance to the manipulation is soon established. Nephrectomy at first appeared strongly indicated in this case, but the good results of lavage proved this serious operation not necessary. Internally, tonics, salol or urotropin, and alkaline preparations were freely used. Under treatment, pain that had been so severe for some years as to demand morphine, soon disappeared and that drug was no longer necessary. As irrigating solutions, one-half of one per cent. Protargol was used for the first few months and for the remainder of the time, 1 to 2000 silver nitrate in distilled water. For the bladder, a saturated solution of boracic acid was first employed; later 1 to 5000 silver nitrate. A second case of the same character is now improving under similar treatment.

Fifth—*Ureteritis*: One instructive case of this condition may be briefly cited. The patient was Mrs. P., age forty-six. The most prominent symptom was pain in the right side. This

was diagnosed as ovarian in origin, but abdominal incision and examination showed the ovary to be normal. The patient's physician strongly suspected a diseased ureter and referred her to me for examination. Cystoscopic examination showed an inflamed and irritable bladder. The left ureter was easily explored with an ordinary blunt catheter, but the opening of the right ureter could not be located. Diagnosis of the left kidney lesion, from the urine obtained, was a mild, chronic, catarrhal pyelonephritis. At the second examination, the right ureter was located; as the opening was very minute, a slim, sharp pointed catheter was used, gentle introduction of this causing great pain. Diagnosis of the urine thus obtained was subacute parenchymatous-nephritis and a marked chronic ureteritis. Treatment was instituted and kept up for four and one-half months; the left kidney immediately responded and soon became normal. The following procedure was employed in giving lavage of the right kidney and ureter. After the sharp pointed catheter reached the pelvis of the kidney, it was withdrawn an inch and some of the fluid injected; the catheter was then withdrawn another inch and more fluid injected. This process was repeated until application had been made to the entire length of the ureter. This made possible the injection of an increasing amount of fluid and thoroughly washed, and to a certain extent, dilated the ureter. The insertion of a ureteral bougie greatly facilitated the passage of the catheter. At present there are no microscopic signs of disease of kidney or ureter and tenderness and pain have disappeared. The irrigating agents used in this case were protargol, nargol, boracic acid, and finally, 1 to 2000 silver nitrate; all were employed quite warm. The usual tonic internal treatment was also administered.

Sixth—*Chronic Parenchymatous Nephritis*: In this disease the results of lavage naturally depend upon the severity of the process. In some cases the general condition of the patient is so lowered that lavage produces little if any alleviation; in others, destruction of tissue has so far advanced that irrigations are worse than useless. In the largest number of patients presenting themselves, however, improvement following the institution of treatment is surprising, in some instances almost miraculous. For years the profession as well as the laity have virtually held up their hands in the presence of "Bright's" disease, and even now the

announcements of pioneers in the new thought of treating this disease locally are received with credulity. But results, if bearing the stamp of truth, command admiration and respect and should be welcomed by all broadminded persons. The microscope does not lie and clinical pictures of improved physical condition are supported by the statements of patients. The truth about this newer method of treating nephritis may at present seem a trifle unreal, but truth is mighty and when once determined, is lasting. Many observers in all parts of the world, each working in his own particular way, are arriving at essentially the same conclusions; from this it is fair to assume that their deductions possess merit. All these workers cannot be mistaken. All patients cannot be made to think they are better when they are not; they, more keenly than the physician himself, realize the improvement in their condition.

Case after case could be cited in which the diagnosis of sub-acute or chronic parenchymatous nephritis, supported by clinical deductions and by microscopic findings, could be regarded as a certainty and in which internal medicines have proved of little worth. Now, since irrigation of the kidney has been practiced, the picture in these cases is changed. Casts, disintegrating epithelium, and similar elements have disappeared from the urine, a healing process has supplanted an extending inflammation, and restoration to complete health even is made possible. Such facts cannot be overlooked. If an experienced observer be honest and does careful and skillful work, and like yourselves is conservative in his deductions, full credit should be accorded to what he has done. As for myself, I feel that in my limited sphere, success has attended my efforts in treating chronic parenchymatous nephritis by means of lavage of the kidney; with my teachers, I believe this procedure is not only possible, but when carefully performed will give most excellent results. Simply that it is a new thought should count for nothing. As we are men of science it behooves us to welcome every innovation that savors of practicability and real worth. Not hastily it is true, but after thorough investigation, which in this instance is gladly welcomed by those who advocate the newer treatment. Such investigation should be guided particularly by the hope that herein lies a means of relief for the suffering and afflicted. It is true the element of time may

in this work not give us such strong support as we now hope, but for the present we must believe we are working in the right direction; the indications now are that ere long the proofs will be unassailable.

It should be here stated that in chronic parenchymatous nephritis, as in no other class of cases, is watchful, persevering supervision so imperative. The temperament, the surroundings, the moral atmosphere, the diet, in fact every item in the daily life of the patient, requires the most minute attention. Internal measures, in conjunction with lavage, are of vital importance, though the very best of these measures fall far short of rendering valid the claims often made for them. Local medication of the kidney for nephritis is carried out in essentially the same manner as indicated for the renal lesions previously discussed.

In closing, I wish to add only a brief resume of the points presented for your consideration:

First—Lavage of the kidney is not alone justifiable, but is a procedure whose importance demands recognition from the entire medical profession. Patience, gentleness and experience are necessary attributes in the successful application of this procedure.

Second—Lithaemia is more quickly eradicated when in addition to the usual treatment lavage of the kidney is employed.

Third—Pyelitis is a condition that should be recognized at any stage as a danger signal and promptly treated. If possible the cause should be ascertained and removed. Very mild cases require only rest, and the administration of salol or urotropin; for all others, catheterization and irrigation with boracic acid or silver salt solutions once or twice weekly are indicated.

Fourth—Pyelonephritis may be treated in the same manner with similar agents.

Fifth—Ureteritis will heal under lavage with at first soothing and later mildly stimulating fluids.

Sixth—Chronic parenchymatous nephritis can be alleviated, and in certain phases cured, by proper irrigation combined with appropriate diet and internal medicants; other forms of nephritis also are in a degree amenable to lavage.

ANÆSTHETIC IMPOTENCE: REPORT OF A CASE

By F. W. ROBBINS, M. D., Detroit, Mich.

[Read before the Annual Meeting of the American Urological Association, Portland, Ore., July, 1905.]

THE case which I desire to report has been of great interest to me. He has been examined repeatedly by several of my confreres, none of whom has ever seen such a case. We have not succeeded in relieving his condition in any degree.

I first saw Mr. C. W. S., at the request of Dr. T., September 14, 1904, and obtained the following history: Age thirty-six, consulting engineer, having the degrees of A.B., C.E., from one of our largest and best institutions. He gives a very excellent family history. Formerly he was a mountain climber, frequently making thirty to forty miles in a day; also took long bicycle trips. In 1897 did a large part of Continental Europe on bicycle during a period of three and a half months. Only once did he notice any physical defect from this work and that after a ride from Dresden to Paris, when he suffered severely for some time from cramps in calf of leg and thigh, which he thinks were caused by taking iodized sarsaparilla.

He is about five feet nine inches high, weight about 160 pounds, and in every way has the appearance of a perfectly healthy man. He has never contracted any venereal disease, nor had any serious ailment. His history shows this much of a neurotic element: For twenty years he has had frequent attacks of neuralgia especially during the winter season. The fourth nerve of the left side is the part affected and he thinks that this tendency is inherited.

Never has he had any impelling desire of a sexual nature. Never has he had any temptation to masturbation or sexual intercourse. Never has he had any seminal emission, except at night, and these have occurred since puberty at intervals of three or four weeks, and occasionally three or four times in one week. Erections are firm in the morning, also at night. Patient has been married over three years, and not until after marriage did he

appreciate the fact that he was not in every respect as other men. He has a desire for children, and a certain sexual impulse to the extent of being able to have a firm erection whenever he desires; when in contact with his wife she becomes normally passionate, but he has never experienced any pleasurable excitation or ever had an orgasm. He has never attempted sexual intercourse except with his wife. Through his physician, his wife had been instructed in the various arts of sexual excitation which she has practiced on her husband, with no result. His physician has treated him faithfully, circumcised him, operated for varicocele and finally tied the dorsal vein. He has not been in any respect improved.

Within six days before consulting me he had had three nocturnal emissions. Testes are now soft and rather smaller than the average. Prostate fairly developed and fluid expressed from the gland contained prostatic granules, but could express no fluid from the seminal vesicles; two weeks later, however, I expressed fluid from the vesicles containing many spermatozoa, the larger number not active. There were no pus cells. The succeeding examinations of expressed and condom fluid contained many more or less active spermatozoa. We could detect no rectal irritation that might reflexly inhibit orgasm. There appears to be no trouble along the nerve tracts. Erections are strong; ejaculation, when asleep, seems to be normal and the character of the seminal discharges shows nothing abnormal as regards the testes or seminal vesicles.

Here certainly is an unusual case of impotence. It has been looked upon as psychic, but this explanation scarcely harmonizes with the fact that never from puberty has he had a normal sexual impulse, never felt any desire or temptation to masturbation and never experienced any frictional excitation. The only basis upon which we have been able to explain this condition, is that of lack of sensitiveness in the nerve terminals of the glans penis and frenum.

Various attempts were employed to render those parts more sensitive, but without effect. Hypnotic suggestion has been considered but not employed. The possibility of there being some defect of the nerve arrangement in the cord has been thought of but to the mind of my consultants and myself the anaesthetic theory appears most reasonable.

THE CHOICE OF TECHNIQUE IN PROSTATECTOMY

By JOHN R. WATHEN, A.B., M.D.

Professor of Surgery in Kentucky School of Medicine; Surgeon to St. Anthony's Hospital, Louisville City Hospital and Kentucky School of Medicine Hospital, Louisville, Ky.

[Read by title before the Annual Meeting of the American Urological Association, Portland, Ore., July, 1905.]

IT is undoubtedly a fact that there are certain periods in the history of surgical procedures, which are due largely to the fads and fancies of the times.

They are influenced or made possible by the particular preferences shown by a few pioneers in a new field of work.

This was especially true only a few years ago in gynecology when the abdominal and vaginal operators each claimed the superior route, and only after much discussion, have they agreed that there are certain cases suited to each. Nowhere has this been better shown than in the present day arguments for the suprapubic and perineal prostatectomies, and it is the purpose of this paper to attempt to draw some conclusions from the collected reports of others, and the writer's personal experience.

L. S. Pilcher ¹ says: "It is of interest to note, in surveying the literature of the subject, that among the many different methods of attacking the prostate which have been proposed by different surgeons, practically equally good results are reported to have been secured by the most diverse methods, by men who had become specially skilled in their application." Nevertheless, we have about reached a time when we should make deductions from the combined clinical and pathological contributions to literature, and begin to formulate views as to the choice of technique to be employed in the removal of the enlarged prostate.

What we need is not to adopt a method which has been successful in the hands of a few especially proficient, but a technique which will be the safest, the easiest, and offer the best results as to permanent cure of the patient.

The enlargement of the prostate, according to Deaver,²—

"occurs in two main varieties—one variety, the glandular or adenomatous overgrowth, constituting the majority of cases; while the fibrous enlargement constitutes the minority, and even at times approaches more nearly in type to prostatic atrophy, or to sclerosis of the neck of the bladder, or is at least conspicuous by the relatively slight enlargement compared to the magnitude of the symptoms produced."

Based on these generally accepted views as to the pathological anatomy of the prostate, should be our operative methods for its removal.

In those large, soft adenomatous prostates, which rise up into the bladder and are often found to have a pedunculated middle lobe, it is generally conceded that they are easiest removed by the suprapubic route, while the dense fibrous variety, situated low down in the perineum and often associated with them, an inflammatory condition, had better be enucleated from below by the perineal route.

The intermediate type, and the writer believes this to be the most common variety, where we have a medium-sized enlargement of the two lateral lobes, is the prostate which seems to cause the greatest divergence of opinion as to its method of removal. In very doubtful cases where we wish to find the best method of approach, the conclusions of Watson,³ may be followed to advantage: "That the best way to determine whether any individual case was, or was not suitable for the perineal operation, was to make a digital exploration of the actual conditions present through the posterior urethra, by means of an ordinary external perineal urethrotomy incision, as the first step of the operation." "That at least twice out of three times the gland would be found to be readily removable by the perineal urethral incision just mentioned, and that in the other third of the cases the surgeon would proceed to go on to do a suprapubic operation at once, the perineal urethrotomy exploratory incision not only not interfering with its performance, but, on the contrary, aiding it, and also supplying additional drainage afterwards." While the cystoscope and other methods are recommended for examination of the prostatic enlargement, such procedures do not meet with general approval and are only to be employed in special cases and by those who are very proficient in the use of such instruments. It is the writer's

experience that the less instrumentation before operation, the better for the welfare of the patient.

Having determined the type of prostatic enlargement we have to deal with, and the method of its removal, by the suprapubic or perineal routes, we now are confronted with the question of the best technique to employ.

The suprapubic route, which has been so popular in England, due largely to the excellent work of Freyer, of London, who utilized the methods of McGill and Fuller, certainly has much to recommend it, especially in those types of prostates where a large adenomatous mass with middle lobe involvement projects high up into the bladder. Mr. Freyer³ is inclined to think that all hypertrophied prostates are best removed by this method and has only found one case out of 110 reported in which he was unable to enucleate the mass. Deaver,² in discussing the choice of operation, says: "The suprapubic operation is in certain cases (I think the majority) in every way preferable to that through the perineum," and again he says, "the preferable route for total enucleation of the prostate is the suprapubic."

White,⁴ after discussing the suprapubic route, says: "As to the other methods of prostatectomy—the perineal, the 'combined,' etc.—there can be no doubt that they have often given good results in the hands of some surgeons, and are still the methods preferred by a number of able workers in this field." "There are probably cases for which they will always be found specially suitable, but at present it appears to me that past experience does not justify the expectation that the results of prostatectomy by the perineal route will compare favorably with those of the total enucleation above described."

These few quotations from such able advocates of the suprapubic method, show the positive stand they have taken, and it is with interest we read, as I will later quote, equally dogmatic assertions by the champions of the perineal route.

While there has been much dispute of late as to the priority of the suprapubic operation, yet the essential principles are practically the operation as done by Freyer.

Briefly, this consists of the introduction of a catheter into the bladder, and this viscus irrigated with some mild antiseptic solution. An incision is then made just above the pubic bone and

carried down to the bladder which is now opened. With the finger nail or scissors, an opening is made through the bladder mucous membrane over the hypertrophied prostate, and with two fingers in the rectum, or through a perineal incision, the prostate is pushed up from below and the enucleation begun by blunt dissection with the fingers.

Freyer say that the large adenomatous prostates "frequently shake themselves loose" and are very easily removed. It is probable that in the majority of the cases the prostatic urethra is removed with the hypertrophied mass, notwithstanding the assertions of some operators who claim that such is not the case. The cavity from which the mass was removed, now becomes much smaller, due to pressure of the surrounding structures and contraction of its walls. Hot sponges or douches will usually control the hemorrhage, but if alarming, the cavity can be packed with gauze. A rubber drainage tube is next introduced and stitched to the skin and if the incision was large a few stitches are need to partially close the opening.

Some operators favor a drain through the perineum and if a preliminary incision has been made here before the operation above, it will be of advantage in infected cases, allowing through and through irrigation of the bladder.

Deaver² says: "It has been pointed out by McGill and Richardson that drainage is really better by the suprapubic wound; for it is a fact that where the bladder is drained both ways simultaneously, almost all the urine escapes by the suprapubic tube, and that when both tubes are removed, the perineal tract closes first." This last statement has not been the writer's experience, and has only occurred when the lower tube was obstructed with pus, etc.

The perineal route which has become so popular of late in this country, and has even been styled the "American operation," has so many various procedures that to properly discuss the method each surgeon's individual technique should be considered. The simplest and most rapid operation is that employed by Goodfellow,⁵ who describes it as follows: "The patient on the table, the staff is passed. A change is then made to an exaggerated lithotomy position, the legs held by assistants. A longitudinal median incision, beginning at the scrotoperineal fold, a little over

an inch in length, is made and carried to the urethra. The tissues are then cleared away from the urethra until the membranous part is perceptible; this is perforated with the knife or finger, the bladder entered, the staff withdrawn, the enucleation begun and completed, this taking rarely over ten minutes, generally about six."

Parker Syms has practically the same technique with the exception that he introduces a rubber ball tractor to aid in bringing down the prostate into the perineum for easier enucleation. Hugh Young employs a more elaborate dissection and claims by this method to do a conservative operation, preserving the ejaculatory ducts. He introduces a ground staff and then makes an inverted V incision in the perineum, carried only through the skin and superficial fascia, and then divides the central tendon of the perineum and the rectourethralis muscle which lies beneath, covering the membranous urethra and apex of the prostate. An incision is now made into the membranous urethra just in front of the prostate and the edges caught with forceps. The staff is now withdrawn and the closed tractor introduced. This is then spread open and gentle traction made downwards and upwards so as to bring the prostate with its posterior aspect well in view in the perineal opening.

An incision is now made on either side of the urethra and the lateral hypertrophied lobes enucleated; also a median lobe can be brought out through one of the lateral openings. If a calculus complicates the case, and this is said to occur in nearly one-third of the cases, the urethra is split with scissors along its left lateral wall, from the urethrotomy wound in the membranous urethra up to its vesical orifice, and the stone removed.

Some operators claim to close the urethra with sutures and then suture up the entire wound, expecting union by first intention. In this latter procedure, a self-retaining is introduced through the penis and allowed to remain until union has taken place. The writer prefers a technique which embodies many of the good points of those already described, and which aims at rapidity, safety and simplicity. A staff is introduced with the patient's legs extended, and when the legs are flexed upon the abdomen, a straight median incision is made down to the muscles of the perineum. The writer sees no advantage, but rather a disadvant-

age in elevating the hips with a pillow as usually recommended, for the reason that the hemorrhage accumulated in the cut does not run out as when the hips are lowered, thus obscuring the field of work; also there is much less danger of injuring the rectal wall when lowered, as the operator's fingers are then forced to work in the opposite direction, much aiding in the enucleation of the difficult prostates. Why a transverse incision should ever be used in this operation, the writer is at a loss to know, as the straight median incision affords more space than is needed even for the largest prostate, and at the end of the operation is the only type of an incision which allows of a neat closure and convenient drainage at the most dependent part of the perineum.

The central tendon and other structures are now divided after the method of Young; also the urethra opened in front of the prostate. At this stage the technique differs decidedly from Young's method, and a long probe or director is introduced alongside of the grooved staff, and the latter is gently withdrawn. This probe marks the prostatic urethra and the index finger is next used to dilate the prostatic urethra and explore the bladder, pressure being made from above to aid in bringing down the prostate. At this stage of the operation, it has been the writer's experience to note that when the finger is introduced into the narrow prostatic urethra, that this structure will usually burst laterally and the two lateral lobes will almost fall out or enucleate themselves. When this does not occur and the prostate is of a rather firm consistency, Young's tractor is introduced, and by gentle traction downwards and upwards, the prostate is held firmly while it is partly dissected away from the surrounding structures, especially posteriorly.

This is done by blunt dissection, having an assistant place one finger in the rectum to guide the operator. With the finger nail of my index finger or if needed the scissors, incisions laterally are made and the enucleation rapidly performed.

The two structures which we should be careful not to tear or injure are the neck of the bladder and the rectal wall.

After this rapid enucleation, very hot water should be used to check hemorrhage and large bleeding vessels ligated, but this latter is seldom needed. A very large soft rubber drainage tube (about 40 F. and twelve inches long), with open ends and two

fenestrations close together, is now introduced just past the bladder neck and sutured to the skin a little above the anus. The prostatic cavities from which the lobes were removed, are now packed gently with gauze, avoiding too tight packing upon the rectal wall. This gauze is brought out of the wound just above the rubber tube and the wound sutured with several chromic cat-gut interrupted sutures embracing as much of the deep muscles as possible.

The after treatment is comparatively simple and consists in irrigating the bladder to remove the blood, and prevent the formation of clots. This should be done on an average, every two or three hours during the first twelve hours, as is indicated by the color of the drainage. The tube should drain into a big-necked bottle placed between the legs, and no other dressings added except a small amount of loose gauze placed around the tube.

The gauze packing in the perineal wound is removed in forty-eight hours and the tube in the next day or two. If the patient is in good condition, he is allowed to sit up very early, depending upon how he stood the operation and his general constitution.

Young claims that by his method alone are we able to preserve the ejaculatory ducts, but the reports of many operators employing a different technique, namely, Goodfellow, show that a considerable number of patients have reported the occurrence of apparently natural ejaculations.

Abell⁶ has well expressed the writer's views when he says: "The question of operating so as to avoid injury to the ejaculatory ducts, has been rather widely discussed, but to the writer, their preservation seems to be of little moment; granting the loss, health and comfort are of more value to a man than they at the period of life at which this condition demands operation."

Cabot,⁷ after discussing the various methods says: "I am convinced, however, where other conditions are favorable, that perineal prostatectomy is the operation of choice."

Syms⁸ concludes: "To my mind there is no question that perineal prostatectomy, performed through a single, simple, median incision is the safest and most scientific method which has yet been evolved."

Watson¹ has certainly summed up the question of choice

when he says: "It will be seen, therefore, that my chief contribution to the subject of operative treatment was the demonstration of the fact that perineal prostatectomy through an ordinary external perineal urethrotomy incision was readily to be accomplished in a large majority of cases, and that it was the operation of choice because of its lower mortality, but not to be adhered to operation; the suprapubic method having a very definite and distinctly advantageous place, which was, however, in a minority of the whole."

The question of mortality has been discussed by almost every writer upon this subject, and while it will always command attention in any operative procedure, the statistics from the limited number of collected cases can hardly be fully accepted as yet, and a wider experience may materially change the figures presented. It is the writer's firm conviction that when these operations become more general, we will find a higher mortality rate even with the improvements in technique. The writer hardly endorses the opinion of Rodman⁹ when he says: "The mortality of prostatectomy is almost necessarily greater than many of the operators would have us believe. I have never been able to bring myself to believe that prostatectomy is a simple procedure nor do I believe that the mortality is only two to three per cent."

After the question of mortality, there is no more important one for consideration in the selection of the method of operating on the enlarged prostate, than that of the after results. Among the many sequels of this operation, are those of incontinence, fistulæ, both urinary and rectal, and the loss of ejaculation, the last one having been previously discussed.

Incontinence has followed all the various methods in some degree, but the suprapubic seems to have occasioned fewer cases of this annoying condition. Many times a temporary incontinence occurs and a few months later the patient gradually regains control over his bladder.

According to Ruggles,¹ incontinence is due to injury to the compressor urethræ muscle and not to the neck of the bladder as many have supposed.

Freyer,¹⁰ after discussing the findings in an autopsy of an operated case which died from a complication, says: "It is further demonstrated definitely, that the true sphincter of the

urethra (or bladder) is situated at the membranous portion of the urethra."

The treatment of incontinence has received little attention from the operators, who have believed that it was of little magnitude compared with the previous dangerous condition of retention for which it has been substituted.

Wilson ¹¹ reports the cure of two cases which followed prostatectomy and gives his method as follows: "The treatment of the dribbling consists in bladder irrigation, with the addition of filling the bladder full of the irrigation solution, instructing the patient to voluntarily contract his compressor urethræ muscle." "After doing so, he is told to expell a small portion and again shut off, thus dividing the evacuation of the fluid into from five to six conscious and voluntary efforts." "Instructions are given that when the bladder fills with urine, its evacuation should be divided into five or six portions in like manner." "By this method we gradually bring the cut-off muscle up to its normal tonicity and as a result the incontinence ceases."

Urinary fistulæ are a frequent occurrence after the perineal method, but the majority of the cases close in a few weeks. Curettage of the fistulous tract will usually effect a speedy cure. Rectal fistulæ are much more difficult to cure and are probably produced by too tight packing of the gauze against the rectal wall. Some cases may result from injury or tear and others from the low vitality of the patient, with a slough in the perineal tissues. Often the fistulæ will close when the perineal incision finally heals up, but for those which persist for a greater length of time, it is advisable to do an operation which Young has employed in three cases and in a personal communication (Feb. 1905), to the writer describes as follows:

"Suprapubic cystotomy, insertion of rubber drainage tube in the suprapubic wound. Patient is then put in the dorsal lithotomy position, and by an incision similar to the original prostatectomy incision the fistula is dissected out, the rectum separated from the prostatic urethra, and the two openings closed separately with fine silk, two or three layers each. Patient is then put on a diet of albumen, and the bowels kept closed for about ten days, when they are carefully opened with oil by mouth, preceded by an injection of oil in the rectum."

"The suprapubic drainage is maintained for about three weeks until you are perfectly certain that the rectal and the urethral openings are both firmly closed. By this means I was able to cure these three cases where several previous operations without the use of the suprapubic drainage failed entirely." "The suprapubic drainage is very necessary so as to take away all strains on the urethra from the sutured urethral wound."

In conclusion the writer believes that there are distinct indications for the choice of operations in prostatectomy which should be based upon the anatomical and the pathological conditions present. Good and bad results have followed both the suprapubic and the perineal routes, and those operators who will carefully weigh the advantages and disadvantages of each, and apply that which is best suited to each individual case, will in the future be able to report the largest percentage of complete cures.

REFERENCES.

- ¹ *Annals of Surgery*, April, 1905.
- ² Enlargement of the Prostate, 1905.
- ³ *Brit. Med. Journ.*, 1903.
- ⁴ *Annals of Surgery*, December, 1904.
- ⁵ *Journ. A. M. A.*, 1904, xi. 1448.
- ⁶ *Ky. State Med. Journ.*, May, 1905.
- ⁷ *AMER. JOURN. UROLOGY*, June, 1905.
- ⁸ *Internat. Journ. Surgery*, 1905.
- ⁹ *Amer. Prac. and News*, March, 1905.
- ¹⁰ *Brit. Med. Journ.*, 1904.
- ¹¹ *Amer. Prac. and News*, page 407, 1905.

EXPERIENCE WITH THE METHODS OF DETERMINING PHYSIOLOGICAL KIDNEY-FUNCTION FOR OPERATIVE PROCEDURE

By DR. M. KROTOSZYNER and DR. W. P. WILLARD,
San Francisco, Cal.

A PERIOD of several years has elapsed since we started our investigations of the value of determining kidney-capacity or kidney-function wherever surgical interference was contemplated. Nevertheless no attempt will be made in this brief paper to draw from our work final conclusions. The literature upon the subject in question, is replete with contradictory statements upon the value of each and all the methods of determining so-called kidney-function, and the spirited discussion at the recent meeting of the German Surgical Society, showed a glaring divergence of opinions (Rovsing and Israel on one side; Kummell, Casper and others on the other). The attitude of American surgeons towards the question of determining kidney-capacity seems to have been a rather expectant one in the past. A few publications only have appeared on this side of the Atlantic, which, as a rule were not from the clinics and laboratories of men who, by virtue of experience drawn from a large material, would be entitled to an opinion. This conservatism though seems justifiable towards methods, the value of which, to say the least, it still *sub judice*. On the other hand though one's attention is naturally drawn towards methods of examination which are liable to throw more light upon dark kidney-lesions and which give an answer to that all-important question: If one kidney is removed, will its sister-organ afterwards functionate sufficiently?

It is a fact that the older methods of diagnosing kidney-lesions, viz.: inspection, palpation, percussion, examination of mixed or bladder-urine, etc., and even radiography recently added to them, were absolutely inadequate in a great many instances. Cystoscopy, inspection of the ureteral openings and especially ureteral catheterization have helped to place the diagnosis of pathological kidney-conditions on a basis of exactness heretofore un-

known. This can only be reached, however, by catheterization of both ureters, a procedure from which, if executed with the required skill and asepsis, we never have seen any harm. In tubercular kidney-lesions especially where the process has descended to the bladder, catheterization of one (the suspected) side with Nitze's occlusive catheter¹ may suffice, through the use of which diagnostic errors (dribbling of urine on the sides of the ureter-catheter into the bladder) are supposed to be avoided. Devices known as urinary segregators may be diagnostically useful in exceptional cases (where ureteral catheterization is impossible) but will never give that safety and accuracy of a diagnosis derived by inspection and the chemical, bacteriological, and microscopical examination of both urine-samples obtained by double ureteral catheterization. In other words: In a suspected unilateral kidney-lesion both ureters are catheterized. Inspection of both urine-samples shows on one (the suspected) side a turbid or bloody urine, while from the other side a clear fluid is obtained, which later upon examination does not contain albumen nor any of those microscopic elements (casts, renal epithelial-cells, etc.), indicative of an advanced anatomical kidney-disease. A nephrectomy on the basis of this evidence will, as a rule, be followed by a favorable result and an experienced observer like Rovsing² for instance, holds a similar view in his recent report upon the same subject.

But, unfortunately, we often meet cases where such favorable conditions are not present, but where more or less turbid urine-samples are seen on both sides and where the microscopic examination reveals anatomical defects bi-laterally. Or we meet cases where one kidney is the seat of a pyo or hydronephrosis or tuberculosis, etc.: a nephrectomy on the diseased side appears desirable but is deferred on account of the diseased condition of the other kidney, as recognized by the chemical and microscopic examination of its catheterized urine. Or an acute infection may involve one kidney to such an extent as to make its removal an imperative and life-saving procedure even in the presence of facts pointing to anatomical defects in the other kidney, an instance the following case well illustrates.³

Male, fifty years; severe pain in right loin; repeated chills followed by anuria, phosphatic fragments, bladder-urine turbid,

symptoms of general sepsis. Cystoscopy, ureteral catheterization. Right side turbid, purulent urine containing albumen, blood and pus. Left side clearer urine containing less albumen but some pus and a few granular casts.

In such cases particularly, the methods for determining renal capacity or kidney-function as marked out for clinical purposes by Casper and Richter,⁴ should be of paramount value as offering additional evidence and giving the operator a feeling of safety for his decision.

A description of these methods seems superfluous in this connection, as you all are familiar with the theories upon which they are based. A few salient points though may be repeated in order to show where our experience forces us to differ from the opinion of authorities who have created the term kidney-function.

Cryoscopy aims to determine molecular concentration of blood and urine, which as A. v. Kornay teaches, demonstrates the actual work or capacity of the kidneys. In health or under normal conditions molecular concentration of blood is supposed to vary very little ($\Delta = -0.56$ to -0.58). In kidney diseases though the difference between the freezing-point of water and that of blood varies materially, because the kidney-tissue has lost its faculty to rid the blood of its firm molecules. A higher molecular concentration of blood or a lower freezing-point will occur only if both kidneys are materially diseased as one-fourth of the normal kidney-tissue is sufficient to do the whole work. Kümmel, the most enthusiastic representative of this method, determines the Δ of each patient in whom an operation on a kidney is contemplated and refuses to operate if that point rises above -0.60 .

We began our work on blood-cryoscopy with Beckmann's cryoscope but were forced to abandon it temporarily on account of great inaccuracies connected with that apparatus. It stands to reason that reliable results upon which such an important decision as the removal of a kidney is to be based, can only be obtained if the determination of freezing-points is made with the utmost care. It should, if time permits, be done two or three times, if possible by different well-trained observers, the thermometer should be repeatedly tested with distilled water and an apparatus of precision should be employed, thus avoiding errors.

We had more satisfactory results when we began to work

with Zikel's so-called Pectoscope, which combines with very simple manipulation, all the advantages of an instrument of precision. We made our examinations like Rumpel, obtaining the blood from an arm-vein and defibrinating in the freezing-tube, where it had been collected directly from the vein.

We were particularly anxious to satisfy ourselves upon that mooted point of Δ in cases with normal kidneys and found it ranging between -0.54 and -0.60 . In a case of advanced parenchymatous nephritis with general anasarca, a daily secretion of 180 to 300 cc. of urine, a urea-excretion varying between 5 to 10 grammes and all the microscopic evidences of a grave nephritis we found one time $\Delta = -0.56$ and three days later with the same clinical picture -0.60 . A case of acute nephritis gave $\Delta = -0.55$, while a robust young man, suffering from poisoning with illuminating-gas showed $\Delta = -0.61$.

These few examples which coincide with observations reported by Adrain,⁵ Rovsing,⁶ and others tend to show that Kümmell's standpoint is untenable—at least as far as blood-cryoscopy is concerned. In a recent exhaustive compilation on cryoscopy⁷ the Δ in normal kidneys is reported to vary between -0.35 and -0.57 . The meaning of smaller values (such as below -0.56) is not yet sufficiently explained, while Koranyi thinks even these indicate abnormal kidney-action.

In all of our cases of suspected unilateral kidney-lesions we have uniformly subjected both urine-samples obtained by ureteral catheterization to cryoscopy, to the phloridzin and urea-tests. According to Casper and Richter a lowering of the urine freezing-point under -1.0 of that of water means an impairment of renal function on that side. They as well as Kümmell, who bases his statements on several hundred cases of surgical kidney, lay the most stress upon the comparative results for diagnostic and prognostic purposes obtained by these methods.

Casper's phloridzin-test is based upon v. Mehring's observation of this drug having the faculty of producing a renal glycosuria, which is dependent upon kidney-activity. If a great deal of kidney-tissue is destroyed or diseased, none or very little sugar is excreted. Casper therefore concludes that, if after phloridzin-injection no sugar is found in the urine obtained from one kidney, the cells of this organ are inactive or destroyed. He looks upon this as the most important test for kidney-function.

Another method to determine the actual excreting work of each kidney is the comparative study of urea-excretion. Rovsing⁸ suggests at first to determine the urea of the whole daily urine-quantity as giving an approximate idea of the work of all functuating kidney-tissue. Then urea is determined in both urine-samples obtained by ureteral catheterization and from comparison conclusions can be drawn as to which kidney is actually doing the bulk of the work.

All these three methods we have invariably employed in our material and we give here the results of tests made in a few of our cases as the best illustration of the clinical value of these methods.

A brewer of fifty-five years: Hematuria for one year, lost forty-five pounds, tumor palpable in right loin (Grawitz), examination of catheterized (ureter) urine gave:

	R.	L.
Δ	-0.5	-1.5
Sugar (phloridzine)	0.25%	1.28%
Kidney removed; quick recovery.		

Male, forty years: Attack of severe pain on left side (kidney-stone) complete anuria for twenty-four hours. Urine contains red and pus-cells.

Examination of catheterized (ureter) urine for the three functional tests gave:

	R.	L.
Δ	-1.31	-1.41
Urea	0.0085	0.008
Sugar (phloridzine)	2.8	2.8

Upon these findings we gave the patient a favorable prognosis and he has since enjoyed good health.

Male, thirty-five years: History of Lues and Tabes, which caused urine-retention necessitating catheterization. Cystitis, pyelitis and pyonephrosis on left side. Examination July 15, 1904:

	R.	L.
Δ	-1.4	-0.45
Urea	0.017	0.003
Sugar (20 gr. $\frac{1}{2}$ % phloridzine)	2.5%	0%

July 22: Left ureter catheterized, large amount of pus with some urine (20m. of $\frac{1}{2}\%$ phloridzine injected). Tests for sugar made every five minutes. Sugar appeared in urine from right kidney 25 minutes after injection and persisted for 30 minutes. No sugar in urine from left kidney.

	R.	L.
Δ	-1.58	-0.4
Urea	0.018	0.0015

Left kidney removed. Patient made rapid recovery and is well since operation.

These few illustrative cases, and many more could be cited if time and space permitted, prove that the three tests which we generally employ to determine kidney-function have been valuable aids diagnostically and prognostically in our hands. Wherever we find great differences in cryoscopical urine-points, in sugar excretion and in the amount of urea, we certainly feel justified in concluding that little or no work is done by the diseased kidney and that the other side is responsible for the existing renal function. We lay particular stress though upon the fact that all three tests must coincide and must show good or at least fair points on the remaining side before a nephrectomy is permissible.

With growing experience in this work one learns to recognize the anatomical and functional value of each kidney. Good operative results can even be obtained in cases where both kidneys are found to be anatomically diseased as long as sufficient functioning tissue appears to be left in the remaining kidney, which after removal of the hopelessly diseased organ gradually may improve.

¹ Centralbl. f. d. Krankh. d. Harn und Sexualorg. XVI. 3.

² Arch. f. klin. Chir. Vol. LXV.

³ Reported at length in AM. J. OF UROL., May, 1905.

⁴ Function. Nierendiagnostik. 1901.

⁵ Berliner Klin. Wochenschr. 1904, p. 1021.

⁶ L. c.

⁷ Centralbl. f. d. Grenzgeb. d. Med. and Chir., No. 5.

⁸ L. C.